

Unbundling tolls from contracts: a new road PPP model

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Considerable evidence from different countries has revealed important shortcomings in most road public–private partnership (PPP) models. In this paper a new PPP model is presented that overcomes some of the problems found in PPP road contracts. The new model is based on separating user tolls from the fees paid to PPP contractors and setting up new institutional arrangements to oversee PPPs.

Keywords: Contracts; governance; public–private partnership (PPP); road infrastructure; toll roads.

In recent years, many countries have developed public–private partnerships (PPPs) to fund infrastructure investment. Diverse reasons for adopting PPPs have been given in the academic literature (for example McQuaid and Scherrer, 2010; Hoppe *et al.*, 2013). Nevertheless, over the past few years, two main motivations for changing the long-standing paradigm of government providing infrastructure and public services have become clear. The first is the need to raise private funding to circumvent budgetary constraints; second, the associated gain in managerial efficiency.

A number of PPP models, based on different governance approaches, have been implemented over the world to build/upgrade, maintain, operate, and finance new or existing roads. Considerable experience has been gathered in an institutional and regulatory context from situations when the models have not performed adequately. Research into the critical factors for their success—including in areas of economy, contracting and governance—has been carried out (see, for instance, Zhang, 2005). It is therefore possible to identify unexplored areas in this field and produce new models.

The research described in this paper began with the diagnosis and identification of a set of common shortcomings of PPP models based on information from the literature on PPPs—see table 1. The deficiencies and their supporting references were:

- According to Guasch *et al.* (2008), high rates of contract renegotiation have raised serious questions about the viability of PPPs to provide greater efficiency than conventional

approaches. Baeza and Vassallo (2010) highlighted frequent renegotiations in concession contracts in Spain that resulted in higher tolls or extended contracts. There is also evidence in the literature that individual and short-term benefits are sought when PPP agreements are renegotiated and, in most cases, some social benefits are lost (de Brux, 2010).

- Although transport infrastructure agencies might be officially obliged to account for the interest of the user, in reality their existence does not guarantee the preservation of public interest—capture by lobbies, or biased actions may still occur (Meunier and Quinet, 2007). Unfortunately, in current PPP models, decisions are often taken at the expense of users or taxpayers. In the USA, long concession terms of some PPP deals have raised concerns about the protection of public interest (Iseki and Houtman, 2012). In Spain, according to Vassallo *et al.* (2011), the government has incentives to prevent bankruptcy of concessionaries to avoid any pecuniary liability payment ('RPA' in Spain) that has to be paid to concessionaires for early termination. The government prefers to renegotiate with the contractor rather than seeing the public deficit increase and its reputation degraded.

- PPP contractors often have more powerful means to put pressure on the regulator than road users do, and they may well succeed in 'capturing' it (Ragazzi, 2005). Contractors can influence public authorities, leading them to decisions that are detrimental to users or taxpayers but good for themselves (Meunier and Quinet, 2010).

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Table 1. Problems of different road PPP models.

<i>Shortcomings</i>	<i>Toll-road PPP models</i>	<i>Budget-payment PPP models</i>		<i>Hybrid models</i>
		<i>Shadow toll</i>	<i>Availability-payment</i>	
Opportunistic renegotiation	High	High	Moderate	Moderate
Unprotected public interest	High	High	Moderate	Moderate
Asymmetries of information and capture of the regulator	High	High	Low	Moderate
Biased traffic forecasts	High	High	Low	Moderate
Limitation to use tolls to manage mobility (rigid contracts)	Moderate	High	High	Moderate
Future budget commitments	Low	High	High	Moderate

- Some road PPPs have been based on the premise that the private sector is better able to manage traffic risk. However, private sector forecasts have been shown to be wrong (Bain, 2009; Chung, 2009).
- The long-term nature of PPPs, and the need to regulate a PPP contractor once a contract has been awarded, has led to rigid contracts with price caps and toll prices indexed to inflation. Consequently a contract can set up tolls that would not necessarily be optimal in the future because user perceptions and externality values may vary over time. Toll prices are often set to fund infrastructure costs, but they are rarely designed to regulate traffic in order to tackle congestion problems, internalize externalities, or to promote a more rational mobility (Albalade and Bel, 2009).
- An emerging problem of current PPPs is the future commitments derived from long-term PPP agreements. PPPs have often been used by governments to develop or improve infrastructure by transferring costs to future generations of taxpayers (Vassallo and Pérez de Villar, 2010).

This paper presents a new road PPP model that can unbundle toll policy from PPP agreements. The toll policy is based on infrastructure cost recovery, as well as the internalization of externalities. In addition, PPP contractors are paid on performance.

A new road PPP model

Our model solves current PPP shortcomings in the following ways:

- The private sector would only bear the risks that it can reasonably be expected to manage in order to add value through efficiency gains.
- The PPP contractor would be paid on performance (hybrid PPP approaches—see

Aziz, 2007). These payments would not necessarily be related to the revenue produced by the section of road operated by the PPP contractor.

- The private sector would not bear risks if there was a conflict of interest between profit and social factors, for example reduced or zero tolls for low-polluting vehicles.
- Tolls would not be regulated by contracts, but would be periodically updated by the government. This way, the tolls could be changed over time to improve allocative efficiency (Link and Stewart-Ladewig, 2005) and promote sustainability.
- Road charges would be easy for users to understand.

The institutional framework and relationships between different stakeholders in this new model are described in figure 1. In our approach, the tolls collected from a particular stretch of the network would not necessarily be allocated to fund that stretch. The busiest roads would cross-subsidize low-traffic roads within the system. The toll structure would be fairly homogenous across regions in order to be easily understood by users.

Tolls would be charged through an open road tolling (ORT) system. They would be collected by the government either directly, through a public sector entity, or through a franchise with a private company. They would be fixed annually by the government after considering proposals from the department or ministry of transport and the treasury/ministry of finance. Tolls would be set as follows:

- Higher tolls for more polluting vehicles.
- Higher tolls for vehicles causing greater wear and tear costs to the road.
- Higher tolls during periods of congestion.
- Higher tolls for low-occupancy vehicles.
- Flat rates to encourage the use of infrastructure during slack periods, i.e. flat rates for using

certain roads at certain times. This would encourage a more balanced use of the infrastructure network over time.

All tolls would be assigned to a road fund which would ideally guarantee enough money to pay the road network expenditure. The road fund would be managed by an agency regulated by the treasury/ministry of finance.

Road sections, both new and existing, would be managed by the private sector through PPP agreements and the contracting party on behalf of the government would be a specialist PPP agency. The PPP agreement would set up payment mechanisms (PPP fee), which would be primarily based on performance and availability. Consequently, the revenue received by a PPP contractor would not necessarily have to be related to the revenue collected by the government in the section operated by the contractor (user toll). The PPP fee would be based on public opinion, performance-based indicators (reflecting service quality), and the marginal cost of traffic. The marginal cost of traffic responds to the need of incentivizing the PPP contractor to attract more traffic to the road stretch it manages.

Institutional framework

Our model requires a new institutional framework consisting of a road fund and an entity to manage it; a road PPP agency (some countries, such as the UK, Germany and Chile, already have one), and an entity to represent road users.

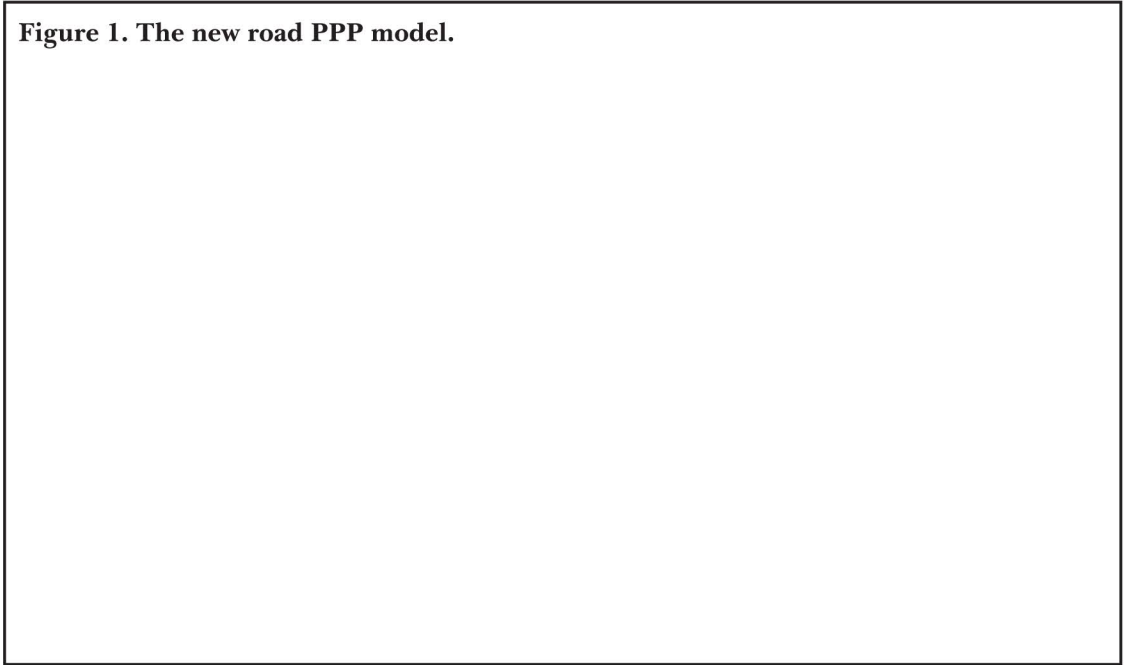
Road fund

The road fund would be a special purpose vehicle to safeguard toll revenue and to make payments to PPP contractors. Legislation would control the use of the fund's resources. Funds would be used to pay contractors and to promote measures that would minimize the environmental impact of having roads.

The road fund would be administered by a road fund management entity that would be supervised by the treasury/ministry of finance. This organization would be entrusted with the management and administration of the road fund in accordance with the law. The road fund management entity would not be able to decide how to allocate resources. However, it would be able to conduct financial operations, such as revenue securitization, with the approval of the treasury/ministry of finance.

The road PPP agency

The road PPP agency would be a government-owned company monitored by the department or ministry of transport. It would be responsible for granting PPPs, participating in the whole process of selection and award of PPPs, and overseeing the PPP agreements. The road PPP agency would be responsible for: co-ordinating the road network; preparing tender documents for PPP agreements; co-ordinating the technical and economic supervision of the PPP agreements; publicizing potential PPP projects; measuring performance against performance indicators established in PPP agreements; and collecting and publishing statistics about PPP



agreements.

User representation

The entity representing users would be created as a public body with its own legal independence and full capacity to act, endowed with its own assets and governed by a secretary responsible for social policies and consumption. The entity would ensure transparency in the information about PPPs to the users and the society. It would circulate information about any changes to PPP agreements that could affect users or taxpayers. The road PPP agency would be required to inform the entity representing the users of all possible PPP agreement modifications or renegotiations that could impact on users or taxpayers.

Why is the model an improvement on previous PPP models?

The model presented should reduce opportunistic behaviour in several ways. The bulk of the contractor's revenues would depend on a set of performance measures, so traffic risk would only be allocated to the PPP contractor in a very limited way. Traffic risk has often been the cause of renegotiation. Moreover, setting up a specialist road PPP agency would lead to better agreements, reducing opportunistic renegotiation and leaving less room for capture.

Unprotected public interest is often caused by improvisation in structuring PPP deals and lack of expertise on the part of government officials. The proposed model includes a much more sophisticated governance approach intended to reduce this problem. In addition, the Entity Representing the Users would monitor the eventual renegotiations on behalf of users and taxpayers and is envisaged to increase transparency in the process.

Asymmetries of information that might lead to the capture of the regulator are also a big problem in dealing with PPPs. These asymmetries would be reduced insofar as a more solid institutional framework would be set up where transparency is greatly encouraged. Moreover, the definition of performance-based payments and the opinion of the users would enable the road PPP agency to obtain fuller information about the operation performance of the road.

Biased traffic forecasts would no longer be the main revenue driver for the PPP contractor. Consequently, the optimism bias problem would diminish substantially because inflated traffic forecasts would not be used by bidders to justify aggressive offers.

Unbundling tolls from contracts would

mean increased *toll flexibility* because tolls could be set independently of PPP fees. The government would be able to vary tolls over the life of the contract to foster allocative efficiency and to promote more sustainable mobility. Tolls could vary by type of vehicle, time of day, environmental sensitivity of the region and so on.

The government's *future budget commitments* would be better controlled with this model because, unlike most of the availability payment approaches already in place, the revenues to fund the system would be relying on real user tolls rather than on the government's budget. In our model, average tolls should be defined by the government to generate enough revenue to finance the whole commitment with private sector contractors. The government might decide to set up lower average tolls for users and subsidize the road fund, but in any case the debt inherited by future governments would be lower than conventional availability payment models.

Summary and conclusions

Unbundling tolls from PPP road contracts would allow more flexibility in toll pricing. Governments would also enter into agreements where the private sector took only the risks that it can manage, so increasing value for money. This would reduce opportunistic renegotiations and optimism bias in traffic forecasts. PPP agreements would be isolated from long-term service changes and tolls could be changed to better meet a government's social and environmental goals. Regulator capture and asymmetry of information would also be reduced. Moreover, our proposed model would improve the quality of information in the following areas: availability of infrastructure, performance of the PPP contractor in providing services, and user opinion.

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